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Claims 1-10 are cancelled

10. Sound generator for anti-sound, signal, speech and music reproduction from the infrasound to the ultrasound range and in response to a required sound signal, the sound generator comprising:

two acoustically-separated volumes;

a sound outlet operatively coupled to at least one of said acoustically-separated volumes;

a pump system, including at least one pump, adapted to convey a fluid volume flow between said acoustically-separated volumes and through said sound outlet, the direct flow component of the fluid volume flow being zero; and

means for modulating said fluid volume flow in response to said required sound signal.

11. Sound generator according to claim 10, wherein at least one of said acoustically-separated volumes is a buffer volume.

12. Sound generator according to claim 10, wherein the pump has a pumping frequency that is greater than or equal to the frequency of the required sound.

13. Sound generator according to claim 12, wherein said pumping frequency is large relative to the frequency of the required sound.

14. Sound generator according to claim 10, wherein the wavelength of the required sound is large relative to the diameter of the sound outlet, thereby to effect unipolar acoustic sound radiation.

15. Sound generator according to claim 10, comprising multiple pumps.

16. Sound generator according to claim 15, wherein the multiple pumps are phase-shifted relative to one another.

17. Sound generator according to claim 15, wherein said pumps are of differing sizes.

18. Sound generator according to claim 10, wherein the means for modulating comprises at least one valve.

19. Sound generator according to claim 10, wherein the pump is the means for modulating.

20. Sound generator according to claim 10, comprising a sensor adapted to record with high time resolution physical data of the pump system, the fluid within the buffer volume, the fluid volume flow or the emitted sound pressure.

21. Sound generator according to claim 20, wherein the sound generator further comprises a control unit for open or closed loop control of the pump system in dependence on the sensed data.

22. Sound generator according to claim 11, wherein said pump system comprises a flexible, actively displaceable wall in the buffer volume.

23. Sound generator according to claim 10, wherein said pump system produces volume displacement and/or pressure variation through a mechanism selected from the group consisting of turning parts, oscillating parts, rotating parts, mechanical waveguides, and by means of standing waves.

24. Sound generator according to claim 10, wherein said pump system has a fixed supply direction.

25. Sound generator according to claim 10, wherein said pump can be reversed and has suck and blow operation.

26. Sound generator according to claim 10, wherein said pump system supplies an analogue volume flow.

27. Sound generator according to claim 10, wherein said pump system supplies a digital volume flow.

28. Sound generator according to claim 10, wherein said pump system or its drive is cooled by the fluid itself.

29. Sound generator according to claim 10, wherein said pump system or its drive is cooled by thermal radiation.

30. Sound generator according to claim 11, wherein said buffer volume comprises a structure selected from the group consisting of a channel, a ring channel, a spiral, a disc, a box, a spherically shaped cavity, and an already existing cavity.

31. Sound generator according to claim 11, wherein a plurality of buffer volumes are operatively coupled to the pump system via movable separating walls or vibrating components.

32. Sound generator according to claim 11, further comprising means for damping standing waves in the buffer volume selected from the group consisting of passive absorbers, active sound damping means, and combinations thereof.

33. Sound generator according to claim 10, wherein said sound outlet is connected to two acoustically-separated volumes.

34. Sound generator according to claim 11, wherein in the buffer volume, as well as through the pressure of the fluid, energy is temporarily stored through a fluid flow or through reactive deflection of components.

35. Sound generator according to claim 10, comprising a plurality of sound outlets.

36. Sound generator according to claim 10, wherein said sound outlet is sealed with a membrane.

37. Sound generator according to claim 10, further comprising an aerodynamic diffuser mounted at the sound outlet.

38. Sound generator according to claim 10, further comprising an acoustical horn mounted at the sound outlet.

39. Sound generator according to claim 10, wherein said sound outlet is a channel.

40. Sound generator according to claim 10, further comprising active or passive acoustic dampers or resonators to damp or cancel the cyclic or other intrinsic sounds of the pump system.

41. Sound generator according to claim 10, wherein in front of and behind the sound outlet are situated reactive elements for sound amplification or filtering selected from the group consisting of Helmholtz resonators, $\lambda/4$ resonators, and an acoustic network.

42. Sound generator according to claim 10, wherein the sound outlet has a grid or fabric as dust and contact protection.

43. Sound generator according to claim 10, wherein said means for modulating comprises at least one valve.

44. Sound generator according to claim 10, wherein said means for modulating modulates the fluid volume flow through a mechanism selected from the group consisting of variation of the pump frequency, a variable pump stroke, switching on and off of individual pumps or fluid channels, the cyclic, amplitude or phase relationship between the modulation means and the pump system, via standing waves in the buffer volume, via a siren mechanism, and combinations thereof.

45. Sound generator according to claim 18, wherein said at least one valve modulates the fluid volume flow through amplitude, frequency or phase control.

46. Sound generator according to claim 18, wherein a plurality of valves modulate the fluid volume flow through the closing and opening of individual valves.

47. Sound generator according to claim 10, wherein, in a pump with one supply direction, the fluid volume flow is guided by two valves in front of and behind the pump according to the fluid volume flow modulation to be achieved.

48. Sound generator according to claim 10, wherein, in a pump with one supply direction, the fluid volume flow is guided by two valves in front of and behind the pump through flow deflection outwards or into the buffer volume respectively.

49. Sound generator according to claim 11, wherein the entire pump system or parts thereof, or the fluid in the buffer volume or in the sound outlet, undergo natural oscillation, thereby achieving passive modulation.

50. Sound generator according to claim 21, wherein said control unit compensates for the frequency-dependent functioning of the pump system and/or losses or non-linearities in the compression by the pump system.

51. Sound generator according to claim 10, comprising two pumps operating at high frequency with almost the same frequency, thereby to generate low-frequency useful sound radiation according to the Tartini effect.

52. Sound generator according to claim 10, comprising two or more pump systems or parts thereof having the same or opposing output directions, the pump systems or parts being linked electrically or mechanically, the linkage being controllable so as to achieve a modulation.

53. Sound generator according to claim 20, wherein said sensor records the pressure and/or temperature and/or fluid volume flow and/or the speed of the fluid volume flow and/or the sound pressure outside the pump or another variable characterising the fluid volume flow or movements of the pump system.

54. Sound generator according to claim 21, wherein said control unit compensates for the predetermined behaviour of said pump system, thereby rendering a sensor unnecessary.

55. Sound generator according to claim 10, comprising a plurality of sound outlets which form one-, two-, three-dimensional acoustic arrays or an end-fired line or a two-pole arrangement, whereby through amplitude, frequency and/or phase adjustment, any desired directional characteristic can be realised.

56. Sound generator according to claim 15, wherein said pumps are connected in series.

57. Sound generator according to claim 15, wherein said pumps are connected in parallel.

58. Sound generator according to claim 10, comprising a pipe, the sound outlet being located on the pipe.

59. Sound generator according to claim 11, wherein the buffer volume has an additional opening.

60. Sound generator according to claim 59, wherein the additional opening has a large flow resistance.

61. Watch, mobile telephone, remote control unit, pen, spectacles, jewellery, bank card, keyboard, screen, key ring, toy, household item, hearing aid or other component incorporating a sound generator according to claim 11, and whereby non-utilised or specially designed dead volumes are used as buffer volumes.

62. A loudspeaker system incorporating a sound generator according to claim 10.

63. A mobile or rotating component incorporating a sound generator according to claim 10.

64. A method of active noise control comprising the step of destructive interference using a sound generator according to claim 10.

65. Sound generator for anti-sound, signal, speech and music reproduction from the infrasound to the ultrasound range and in response to a required sound signal, the sound generator comprising:

first, second and third acoustically-separated volumes;

at least one sound outlet between said first and third and/or said second and third acoustically-separated volumes, respectively;

a pump system adapted to convey a fluid volume flow between said first and second volumes; and

means for modulating a fluid volume flow through said at least one sound outlet.

66. Fluid pumping device comprising an inlet, an outlet, a waveguide located therebetween and a vibrational exciter adapted to excite mechanical transverse waves in said waveguide, thereby to generate fluid flow from said inlet to said outlet.

67. Method of generating sound in response to a required sound signal, in particular reproducing anti-sound, signal, speech and music in the infrasound to the ultrasound range, the method comprising the steps of:

pumping a fluid volume flow between two acoustically-separated volumes and through a sound outlet such that the direct flow component of the fluid volume flow is zero; and modulating said volume fluid flow in response to said required sound signal.